

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P190107

Luminaire Tested: **TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190107
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27869)
Test Lab: INNOVATION CENTER(G2)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH BORDER PAINTED OPAL LENS
Light Source: (56) NICHIA 5000 NF2L757DRT
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 300mA OT25W/1

Summary

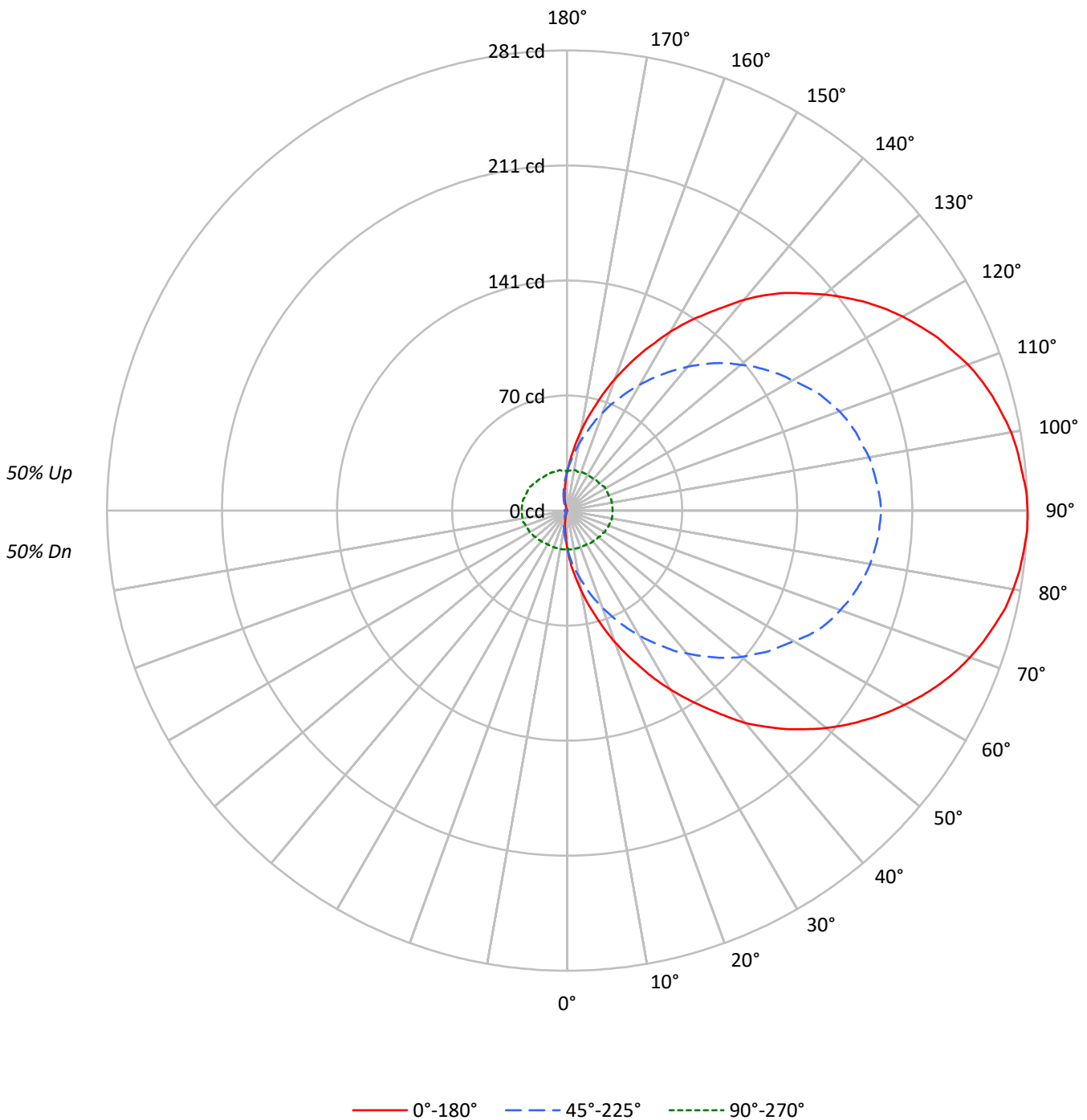
Lumens per Lamp: N/A
Luminaire Lumens: 884.9 lumens
Efficiency: N/A
Efficacy: 61.9 lumens/watt
Spacing Criteria (0/90/45): 3.97 / 1.65 / 3.23
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

Input Watts (W): 14.3
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT

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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20	
RC	80				70				50				30				10	0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	92	85	79	74	84	78	73	68	65	60	57	52	49	46	41	38	36	30
2	82	71	63	56	74	65	58	51	53	48	43	43	38	34	33	29	26	21
3	73	61	52	44	66	56	47	40	45	39	33	36	31	27	27	23	20	16
4	66	53	43	36	60	48	40	33	39	32	27	31	26	21	23	19	16	12
5	60	46	37	30	54	42	34	27	34	28	22	27	22	18	20	16	13	9
6	55	41	32	25	50	37	29	23	31	24	19	24	19	15	18	14	11	8
7	51	37	28	21	46	34	25	19	27	21	16	22	16	12	16	12	9	6
8	47	33	24	18	42	30	22	17	25	18	14	20	15	11	15	11	8	5
9	43	30	22	16	39	27	20	15	23	16	12	18	13	9	14	10	7	4
10	41	27	19	14	37	25	18	13	21	15	11	16	12	8	13	9	6	4

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	906	906	906
5°	1122	884	409
10°	1305	827	187
15°	1500	782	72
20°	1711	748	26
25°	1890	721	11
30°	2083	701	0
35°	2253	708	0
40°	2446	700	9
45°	2592	715	8
50°	2727	717	8
55°	2848	743	8
60°	2968	778	7
65°	3089	800	7
70°	3200	848	7
75°	3303	911	16
80°	3408	963	16
85°	3502	1029	8



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	2.3	0.3
10°-20°	8.5	1.0
20°-30°	18.1	2.0
30°-40°	31.6	3.6
40°-50°	47.8	5.4
50°-60°	64.6	7.3
60°-70°	80.0	9.0
70°-80°	91.8	10.4
80°-90°	97.9	11.1
90°-100°	97.5	11.0
100°-110°	91.1	10.3
110°-120°	79.6	9.0
120°-130°	64.7	7.3
130°-140°	48.0	5.4
140°-150°	31.8	3.6
150°-160°	18.4	2.1
160°-170°	8.7	1.0
170°-180°	2.4	0.3
0°-30°	28.9	3.3
0°-40°	60.5	6.8
0°-60°	172.9	19.5
0°-90°	442.6	50.0
90°-120°	268.3	30.3
90°-150°	412.8	46.6
90°-180°	442.0	49.9
0°-180°	884.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	22	22	22	22	22	
5°	35	32	24	16	13	4
15°	66	52	24	8	3	19
25°	105	75	24	3	1	49
35°	147	101	24	1	0	93
45°	189	127	25	1	1	146
55°	223	150	26	1	1	200
65°	251	170	26	1	1	249
75°	270	183	28	1	1	286
85°	280	190	28	1	1	228
90°	281	192	28	1	1	154
95°	279	190	28	1	1	227
105°	269	183	28	1	1	284
115°	250	169	27	1	1	247
125°	222	149	26	1	1	199
135°	188	127	26	1	1	145
145°	146	102	25	1	0	93
155°	106	76	25	3	1	49
165°	66	52	24	8	4	19
175°	35	32	24	17	15	4
180°	24	24	24	24	24	



TEST NUMBER: P190107

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
2.5°	28.3	28.3	28.3	28.3	28.3	27.7	27.7	27.7	27.7	27.7	27.0
5°	35.4	34.8	34.8	34.1	34.1	34.1	33.5	32.8	32.8	32.2	31.5
7.5°	41.8	41.8	41.2	41.2	40.5	39.9	39.9	38.6	38.0	37.3	36.0
10°	49.6	48.9	48.9	48.3	47.6	47.0	46.3	45.0	43.8	42.5	40.5
12.5°	57.9	57.3	56.6	56.0	55.3	54.1	53.4	51.5	50.2	48.3	45.7
15°	66.3	66.3	65.6	64.4	63.7	62.4	61.1	59.2	56.6	54.7	51.5
17.5°	75.9	75.3	74.7	73.4	72.1	70.1	69.5	66.9	63.7	61.1	57.3
20°	85.6	84.9	83.7	82.4	80.4	79.2	77.9	74.7	71.4	67.6	63.1
22.5°	95.2	94.6	93.3	91.4	89.5	87.5	86.2	82.4	78.5	74.0	68.9
25°	104.9	104.9	103.6	101.7	98.5	96.5	95.2	91.4	86.2	81.1	75.3
27.5°	115.8	115.2	113.3	111.3	108.8	106.2	104.9	99.7	94.0	88.2	81.7
30°	126.1	125.5	124.2	121.0	117.8	115.2	113.3	108.1	101.7	95.2	88.2
32.5°	136.4	135.1	134.5	130.6	127.4	124.8	122.3	116.5	110.0	103.0	94.6
35°	146.7	145.4	144.2	140.9	137.1	133.9	131.3	125.5	118.4	110.0	101.0
37.5°	157.7	156.4	153.8	151.2	146.1	143.5	140.9	133.9	125.5	117.1	108.1
40°	169.3	167.3	164.7	160.9	155.7	152.5	149.9	142.2	133.2	124.2	113.9
42.5°	178.9	177.0	175.0	171.8	166.0	161.5	158.3	150.6	140.9	131.3	120.3
45°	188.6	187.3	185.3	180.8	175.0	171.8	168.6	159.0	148.7	138.4	126.8
47.5°	197.6	196.3	193.7	189.8	184.1	180.2	177.0	168.0	156.4	144.8	133.2
50°	206.6	205.3	202.7	198.2	192.4	188.6	184.1	175.7	162.8	151.2	139.0
52.5°	214.9	214.3	211.1	206.6	200.1	196.3	192.4	182.8	171.2	157.7	144.2
55°	222.7	222.0	218.8	214.3	208.5	204.0	199.5	189.8	178.3	164.1	149.9
57.5°	230.4	229.1	226.5	222.0	214.9	210.4	205.9	196.3	184.1	170.5	154.5
60°	237.5	236.8	233.6	228.5	221.4	217.5	212.4	202.1	189.8	176.3	159.6
62.5°	244.5	243.3	240.7	235.5	227.8	224.0	219.4	208.5	195.6	181.5	165.4
65°	251.0	249.7	246.5	241.3	234.3	229.7	224.6	213.7	200.8	186.0	170.5
67.5°	256.8	255.5	252.3	247.1	239.4	234.9	229.7	218.2	205.3	190.5	174.4
70°	261.9	260.0	256.8	251.6	243.9	239.4	234.3	222.7	209.2	194.4	177.6
72.5°	266.4	265.8	261.9	256.8	249.1	243.9	238.8	227.2	213.7	198.2	180.8
75°	270.3	269.6	265.8	260.0	252.3	247.8	242.6	230.4	216.2	200.8	183.4
77.5°	274.2	272.2	269.0	263.9	255.5	251.0	245.2	233.6	219.4	203.4	186.0
80°	276.7	275.4	272.2	266.4	258.1	253.6	248.4	236.2	221.4	205.9	187.9
82.5°	278.7	277.4	274.2	268.4	260.0	255.5	249.7	237.5	223.3	207.2	189.2
85°	279.9	278.7	275.4	269.6	261.9	256.8	251.0	238.8	224.6	208.5	190.5
87.5°	281.2	279.9	276.1	270.3	261.9	257.4	252.3	239.4	225.2	209.2	191.1
90°	281.2	279.9	276.7	270.9	262.6	258.1	252.3	240.0	225.9	209.2	191.8
92.5°	280.6	279.3	275.4	269.6	261.9	256.8	251.6	239.4	224.6	208.5	191.1
95°	278.7	278.0	274.2	268.4	260.6	256.1	250.3	238.1	224.0	207.9	189.8
97.5°	277.4	276.1	272.2	267.1	259.3	254.2	249.1	236.8	222.7	206.6	188.6
100°	275.4	274.2	270.9	265.1	256.8	252.3	247.1	234.9	220.7	204.6	187.3
102.5°	272.2	270.9	267.7	261.9	254.2	249.7	243.9	232.3	218.2	202.1	184.7
105°	269.0	267.7	264.5	258.7	251.0	246.5	241.3	229.1	215.6	199.5	182.8
107.5°	265.1	263.9	260.0	254.8	247.1	242.6	237.5	225.9	211.7	196.9	180.2
110°	260.6	258.7	255.5	250.3	242.6	238.8	233.0	222.0	208.5	193.1	177.0



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CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	254.8	253.6	250.3	244.5	238.1	233.6	228.5	217.5	204.0	189.2	173.1
115°	249.7	248.4	245.2	239.4	233.0	228.5	224.0	212.4	199.5	185.3	169.3
117.5°	243.3	242.0	238.8	233.6	226.5	222.0	217.5	207.2	194.4	180.2	164.1
120°	236.8	234.9	232.3	227.2	220.7	216.2	211.7	201.4	189.2	175.7	159.0
122.5°	229.7	228.5	225.9	220.7	214.3	210.4	205.9	195.6	184.1	170.5	154.5
125°	222.0	220.1	217.5	213.0	207.2	202.7	198.2	188.6	177.6	163.5	149.3
127.5°	213.7	212.4	209.8	205.3	199.5	195.6	191.1	182.1	170.5	157.7	144.2
130°	205.3	204.6	202.1	196.9	191.1	187.9	184.1	175.0	162.8	151.2	138.4
132.5°	196.3	195.6	193.1	189.2	183.4	180.2	175.7	167.3	156.4	144.8	133.2
135°	187.9	186.6	184.7	180.8	175.0	172.5	168.0	159.0	149.3	138.4	127.4
137.5°	178.3	177.6	175.0	171.8	165.4	161.5	158.3	150.6	141.6	131.9	121.0
140°	168.0	167.3	163.5	160.2	155.1	152.5	149.3	142.2	133.9	124.2	114.6
142.5°	156.4	155.7	153.8	150.6	146.1	143.5	140.3	133.9	125.5	117.1	108.1
145°	146.1	145.4	144.2	140.9	137.1	134.5	131.3	125.5	117.8	110.0	101.7
147.5°	136.4	135.8	134.5	131.3	127.4	125.5	122.3	117.1	110.7	103.0	95.2
150°	126.1	125.5	123.6	121.6	118.4	115.8	113.9	108.8	103.0	95.9	88.8
152.5°	115.2	115.2	113.3	112.0	108.1	106.2	104.3	99.7	95.2	88.8	82.4
155°	105.5	104.9	103.6	101.7	99.1	97.2	95.2	91.4	87.5	81.7	75.9
157.5°	95.2	95.2	94.0	92.7	90.1	88.8	86.9	83.0	79.8	74.7	70.1
160°	85.6	84.9	84.3	83.0	81.1	79.8	78.5	75.3	72.1	68.2	63.7
162.5°	75.9	75.3	74.7	73.4	71.4	70.8	70.1	66.9	64.4	61.1	57.9
165°	66.3	66.3	65.0	64.4	62.4	62.4	61.1	59.2	57.3	54.7	51.5
167.5°	57.9	57.3	57.3	56.6	54.7	54.7	54.1	52.1	50.8	48.3	46.3
170°	49.6	48.9	48.9	48.3	47.0	47.0	47.0	45.7	44.4	42.5	41.2
172.5°	41.8	41.8	41.2	41.2	39.9	39.9	39.9	39.3	38.6	37.3	36.0
175°	34.8	34.8	34.1	34.1	33.5	33.5	33.5	33.5	32.8	32.2	31.5
177.5°	28.3	28.3	28.3	28.3	27.7	28.3	28.3	27.7	27.7	27.7	27.7
180°	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
2.5°	27.0	26.4	26.4	25.7	25.7	25.7	25.1	24.5	23.8	23.8	23.2
5°	30.9	30.2	29.0	28.3	27.7	27.7	26.4	25.7	24.5	23.8	22.5
7.5°	34.8	33.5	32.2	30.9	30.2	29.6	27.7	26.4	25.1	23.8	22.5
10°	39.3	37.3	35.4	33.5	32.2	31.5	29.6	27.7	25.7	23.8	21.9
12.5°	43.8	41.2	38.6	36.0	34.8	33.5	30.9	28.3	25.7	23.8	21.2
15°	48.3	45.0	42.5	38.6	37.3	36.0	32.2	29.6	26.4	23.8	21.2
17.5°	53.4	49.6	45.7	41.8	39.9	38.0	34.1	30.2	27.0	23.8	20.6
20°	58.6	54.1	49.6	45.0	42.5	39.9	35.4	31.5	27.7	23.8	20.6
22.5°	63.7	58.6	52.8	47.6	45.0	42.5	37.3	32.2	27.7	23.8	19.9
25°	69.5	63.1	57.3	50.8	47.6	44.4	38.6	33.5	28.3	23.8	19.9
27.5°	75.3	68.2	61.1	54.1	50.8	47.0	40.5	34.8	29.0	23.8	19.3
30°	81.1	72.7	65.0	57.3	53.4	49.6	42.5	36.0	29.6	23.8	19.3
32.5°	86.2	77.9	68.9	60.5	56.0	52.1	43.8	36.7	30.2	23.8	18.7
35°	92.0	82.4	73.4	63.7	59.2	54.7	45.7	38.0	30.2	24.5	18.7
37.5°	97.8	87.5	77.2	66.9	61.8	56.6	47.6	39.3	31.5	24.5	18.7
40°	103.6	92.0	81.1	70.1	65.0	59.2	49.6	39.9	31.5	24.5	18.7
42.5°	109.4	97.2	84.9	73.4	67.6	61.8	50.8	41.2	32.2	24.5	18.0
45°	114.6	101.7	88.8	76.6	70.1	64.4	52.8	42.5	32.8	25.1	18.0
47.5°	120.3	106.2	93.3	79.2	72.7	66.3	54.1	43.1	33.5	25.1	18.0
50°	124.8	111.3	96.5	82.4	75.9	68.9	56.0	44.4	34.1	25.1	18.0
52.5°	130.0	115.2	100.4	85.6	78.5	71.4	57.3	45.7	34.8	25.7	18.0
55°	134.5	119.1	103.6	88.2	80.4	73.4	59.2	46.3	35.4	25.7	18.0
57.5°	139.0	122.9	106.8	90.7	83.0	75.3	60.5	47.0	35.4	25.7	18.0
60°	143.5	126.8	110.0	93.3	84.9	77.2	61.8	48.3	36.0	26.4	18.0
62.5°	147.4	130.6	113.3	95.9	87.5	79.2	63.1	48.9	36.7	26.4	18.0
65°	151.2	133.9	115.8	97.8	89.5	80.4	64.4	50.2	37.3	26.4	18.0
67.5°	155.1	137.1	118.4	99.7	90.7	82.4	65.6	50.8	38.0	27.0	18.0
70°	158.3	139.6	121.0	101.7	92.7	83.7	66.9	51.5	38.0	27.0	18.0
72.5°	160.9	142.2	122.9	103.6	94.6	84.9	67.6	52.1	38.6	27.0	18.0
75°	164.7	144.8	124.8	104.9	95.9	86.2	68.9	52.8	39.3	27.7	18.0
77.5°	166.7	146.7	126.1	106.8	97.2	87.5	69.5	53.4	39.3	27.7	18.0
80°	169.3	148.0	127.4	107.5	97.8	88.2	70.1	54.1	39.9	27.7	18.7
82.5°	170.5	149.3	128.7	108.1	98.5	88.8	70.8	54.1	39.9	27.7	18.7
85°	171.8	149.9	129.4	108.8	99.1	89.5	70.8	54.1	39.9	27.7	18.7
87.5°	171.8	150.6	130.0	109.4	99.7	89.5	70.8	54.1	39.9	27.7	18.0
90°	172.5	150.6	130.0	109.4	99.7	89.5	71.4	54.7	39.9	27.7	18.7
92.5°	171.8	149.9	129.4	108.8	99.1	89.5	70.8	54.1	39.9	27.7	18.0
95°	170.5	149.3	128.7	108.8	98.5	88.8	70.8	54.1	39.3	27.7	18.0
97.5°	169.9	148.7	128.1	108.1	97.8	88.8	70.1	53.4	39.3	27.7	18.0
100°	168.6	147.4	127.4	107.5	97.2	88.2	70.1	53.4	39.3	27.7	18.0
102.5°	166.7	145.4	126.1	106.2	96.5	86.9	69.5	52.8	39.3	27.7	18.0
105°	162.8	143.5	124.2	104.9	95.2	86.2	68.9	52.8	38.6	27.7	18.0
107.5°	160.9	141.6	122.3	103.6	94.0	84.9	67.6	52.1	38.6	27.0	18.0
110°	157.7	139.0	120.3	101.7	92.7	83.7	66.9	51.5	38.0	27.0	18.0



TEST NUMBER: P190107

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	154.5	136.4	118.4	99.7	90.7	82.4	65.6	50.8	38.0	27.0	18.0
115°	151.2	133.2	115.8	97.8	89.5	80.4	65.0	50.2	37.3	27.0	18.0
117.5°	147.4	130.6	113.3	95.9	87.5	79.2	63.7	49.6	37.3	27.0	18.7
120°	143.5	126.8	110.0	94.0	85.6	77.2	62.4	48.9	36.7	27.0	18.7
122.5°	139.6	123.6	107.5	91.4	83.7	75.9	61.1	48.3	36.7	27.0	18.7
125°	135.1	119.7	104.3	88.8	81.1	74.0	59.8	47.0	36.0	26.4	18.7
127.5°	130.6	115.2	101.0	86.2	78.5	72.1	58.6	46.3	35.4	26.4	18.7
130°	125.5	111.3	97.2	83.0	75.9	69.5	56.6	45.0	34.8	25.7	18.7
132.5°	120.3	106.8	94.0	80.4	74.0	67.6	55.3	44.4	34.1	25.7	18.7
135°	115.2	102.3	90.1	77.2	71.4	65.0	54.1	43.1	34.1	25.7	19.3
137.5°	110.0	97.8	86.2	74.7	68.2	63.1	52.1	41.8	33.5	25.7	19.3
140°	104.3	92.7	82.4	70.8	65.6	60.5	50.2	41.2	32.8	25.1	19.3
142.5°	98.5	88.2	77.9	67.6	62.4	57.9	48.3	39.9	32.2	25.1	19.3
145°	92.7	83.7	74.0	65.0	59.8	55.3	47.0	38.6	31.5	25.1	19.3
147.5°	87.5	78.5	70.1	61.8	57.3	53.4	45.0	38.0	30.9	25.1	19.9
150°	81.7	74.0	66.3	58.6	54.7	50.8	43.8	36.7	30.9	25.1	19.9
152.5°	75.9	68.9	61.8	54.7	51.5	48.3	41.8	35.4	29.6	25.1	20.6
155°	70.1	64.4	57.9	52.1	48.9	45.7	39.9	34.8	29.6	25.1	20.6
157.5°	65.0	59.8	54.1	48.9	46.3	43.8	38.6	33.5	29.0	25.1	21.2
160°	59.8	55.3	50.2	45.7	43.8	41.2	36.7	32.8	28.3	25.1	21.2
162.5°	54.1	50.2	46.3	42.5	40.5	39.3	34.8	31.5	28.3	24.5	21.9
165°	48.9	45.7	42.5	39.9	38.0	36.7	33.5	30.2	27.7	24.5	21.9
167.5°	44.4	41.8	39.3	36.7	35.4	34.8	32.2	29.6	27.0	25.1	22.5
170°	39.9	38.0	36.0	34.1	33.5	32.2	30.2	28.3	26.4	25.1	23.2
172.5°	35.4	34.1	32.8	31.5	30.9	30.2	29.0	27.7	26.4	24.5	23.2
175°	30.9	30.2	29.6	29.0	28.3	28.3	27.0	26.4	25.7	24.5	23.8
177.5°	27.0	27.0	27.0	26.4	26.4	26.4	25.7	25.7	25.1	24.5	24.5
180°	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8



TEST NUMBER: P190107

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
2.5°	22.5	21.9	21.9	21.2	21.2	20.6	19.9	19.3	18.7	18.7	18.0
5°	21.9	21.2	19.9	19.3	19.3	18.0	17.4	16.7	16.1	15.4	14.8
7.5°	21.2	19.9	18.7	18.0	17.4	16.1	15.4	14.2	13.5	12.9	12.2
10°	19.9	18.7	17.4	16.1	15.4	14.2	12.9	12.2	10.9	10.3	9.7
12.5°	19.3	17.4	16.1	14.8	14.2	12.9	11.6	10.3	9.0	8.4	7.7
15°	18.7	16.7	14.8	13.5	12.9	10.9	9.7	8.4	7.7	6.4	5.8
17.5°	18.0	15.4	13.5	12.2	11.6	9.7	8.4	7.1	5.8	5.1	4.5
20°	17.4	14.8	12.2	11.6	10.3	8.4	7.1	5.8	4.5	3.9	3.2
22.5°	16.7	13.5	11.6	10.3	9.0	7.7	5.8	4.5	3.9	2.6	1.9
25°	16.1	12.9	10.3	9.7	8.4	6.4	5.1	3.9	2.6	1.9	1.3
27.5°	15.4	12.2	9.7	8.4	7.7	5.8	3.9	3.2	1.9	1.3	0.6
30°	14.8	11.6	9.0	7.7	6.4	4.5	3.2	2.6	1.3	1.3	0.6
32.5°	14.8	10.9	8.4	7.1	5.8	3.9	2.6	1.9	1.3	0.6	0.6
35°	14.2	10.3	7.7	6.4	5.1	3.2	1.9	1.3	0.6	0.6	0.6
37.5°	14.2	10.3	7.1	5.8	4.5	3.2	1.9	1.3	0.6	0.6	0.6
40°	13.5	9.7	6.4	5.1	4.5	2.6	1.3	0.6	0.6	0.6	0.6
42.5°	12.9	9.0	5.8	5.1	3.9	1.9	1.3	0.6	0.6	0.6	0.6
45°	12.9	9.0	5.8	4.5	3.2	1.9	1.3	0.6	0.6	0.6	0.6
47.5°	12.9	8.4	5.1	3.9	3.2	1.9	0.6	0.6	0.6	0.6	0.6
50°	12.2	8.4	5.1	3.9	2.6	1.3	1.3	0.6	0.6	0.6	0.6
52.5°	12.2	7.7	4.5	3.9	2.6	1.3	1.3	1.3	0.6	0.6	0.6
55°	12.2	7.7	4.5	3.2	1.9	1.3	1.3	1.3	0.6	0.6	0.6
57.5°	11.6	7.1	3.9	3.2	1.9	1.3	1.3	0.6	0.6	0.6	0.6
60°	11.6	7.1	3.9	3.2	1.9	1.3	1.3	1.3	1.3	1.3	0.6
62.5°	11.6	7.1	3.9	2.6	1.9	1.3	1.3	1.3	1.3	1.3	0.6
65°	11.6	7.1	3.9	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	11.6	7.1	3.9	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
70°	11.6	6.4	3.2	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
72.5°	11.6	6.4	3.2	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
75°	11.6	6.4	3.2	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
77.5°	11.6	6.4	3.2	2.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3
80°	11.6	6.4	3.2	2.6	1.9	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	11.6	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	11.6	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	10.9	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	10.9	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
92.5°	10.9	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
95°	10.9	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
97.5°	10.9	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
100°	11.6	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
102.5°	10.9	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
105°	11.6	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	1.3	0.6
107.5°	11.6	6.4	3.2	1.9	1.3	1.3	1.3	1.3	1.3	0.6	0.6
110°	11.6	6.4	3.2	2.6	1.3	1.3	1.3	1.3	1.3	0.6	0.6



TEST NUMBER: P190107

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	11.6	7.1	3.2	2.6	1.3	1.3	1.3	1.3	0.6	0.6	0.6
115°	11.6	7.1	3.9	2.6	1.9	1.3	1.3	1.3	0.6	0.6	0.6
117.5°	12.2	7.7	3.9	3.2	1.9	1.3	1.3	1.3	1.3	1.3	0.6
120°	12.2	7.7	4.5	3.2	1.9	1.3	1.3	1.3	1.3	0.6	0.6
122.5°	12.2	7.7	4.5	3.2	2.6	1.3	1.3	1.3	1.3	1.3	0.6
125°	12.2	7.7	4.5	3.2	2.6	1.3	1.3	1.3	1.3	0.6	0.6
127.5°	12.9	8.4	5.1	3.9	2.6	1.3	1.3	1.3	0.6	0.6	0.6
130°	12.9	8.4	5.1	3.9	3.2	1.3	0.6	0.6	0.6	0.6	0.6
132.5°	12.9	9.0	5.8	4.5	3.2	1.9	1.3	0.6	0.6	0.6	0.6
135°	13.5	9.0	5.8	5.1	3.9	1.9	1.3	0.6	0.6	0.6	0.6
137.5°	13.5	9.7	6.4	5.1	3.9	2.6	1.3	0.6	0.6	0.6	0.6
140°	14.2	10.3	7.1	5.8	4.5	2.6	1.9	1.3	0.6	0.6	0.6
142.5°	14.8	10.9	7.7	6.4	5.1	3.2	1.9	1.3	0.6	0.6	0.6
145°	14.8	10.9	8.4	7.1	5.8	3.9	2.6	1.9	0.6	0.6	0.6
147.5°	15.4	11.6	9.0	7.7	6.4	4.5	3.2	1.9	1.3	0.6	0.6
150°	16.1	12.2	9.7	8.4	7.1	5.1	3.9	2.6	1.9	1.3	0.6
152.5°	16.1	12.9	10.3	9.0	7.7	5.8	4.5	3.2	2.6	1.9	1.3
155°	16.7	14.2	10.9	10.3	9.0	7.1	5.8	4.5	3.2	2.6	1.9
157.5°	17.4	14.8	12.2	10.9	10.3	8.4	6.4	5.1	4.5	3.2	2.6
160°	18.0	15.4	13.5	12.2	11.6	9.7	7.7	6.4	5.1	4.5	3.9
162.5°	18.7	16.7	14.2	13.5	12.2	10.9	9.0	7.7	7.1	5.8	5.1
165°	19.9	17.4	15.4	14.8	13.5	12.2	10.9	9.7	8.4	7.7	6.4
167.5°	20.6	18.7	16.7	16.1	15.4	14.2	12.9	11.6	10.3	9.7	8.4
170°	21.2	19.9	18.0	17.4	16.7	15.4	14.2	13.5	12.2	11.6	10.9
172.5°	21.9	20.6	19.9	19.3	18.7	17.4	16.7	15.4	14.8	14.2	13.5
175°	23.2	21.9	21.2	21.2	20.6	19.9	18.7	18.0	17.4	17.4	16.7
177.5°	23.8	23.2	23.2	22.5	22.5	21.9	21.9	21.2	20.6	20.6	19.9
180°	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8



TEST NUMBER: P190107

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
2.5°	17.4	17.4	17.4	16.7	16.7	16.7	16.7	16.7
5°	14.2	13.5	13.5	13.5	12.9	12.9	12.9	12.9
7.5°	11.6	10.9	10.3	10.3	10.3	9.7	9.7	9.7
10°	9.0	8.4	8.4	7.7	7.7	7.1	7.1	7.1
12.5°	7.1	6.4	5.8	5.8	5.8	5.1	5.1	5.1
15°	5.1	4.5	4.5	3.9	3.9	3.2	3.2	3.2
17.5°	3.9	3.2	3.2	2.6	2.6	1.9	1.9	1.9
20°	2.6	1.9	1.9	1.9	1.3	1.3	1.3	1.3
22.5°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
25°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
27.5°	0.6	0.6	0.6	0.6	0.6	0.0	0.6	0.0
30°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
32.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0
35°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
37.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
40°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
42.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0
45°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
47.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
50°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
52.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
55°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
57.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
60°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
62.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
65°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
67.5°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
70°	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6
72.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6
75°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
87.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90°	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.6
92.5°	0.6	1.3	0.6	0.6	0.6	0.6	0.6	0.6
95°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
97.5°	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
100°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
102.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
105°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
107.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
110°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6



TEST NUMBER: P190107

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
115°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
117.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
120°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
122.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
125°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
127.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
130°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
132.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
135°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
137.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
140°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
142.5°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
145°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
147.5°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
150°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
152.5°	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0
155°	1.3	1.3	0.6	0.6	0.6	0.6	0.0	0.6
157.5°	1.9	1.3	1.3	1.3	1.3	0.6	0.6	0.6
160°	3.2	2.6	2.6	1.9	1.9	1.9	1.3	1.3
162.5°	4.5	3.9	3.9	3.2	3.2	2.6	2.6	2.6
165°	5.8	5.1	5.1	5.1	4.5	4.5	3.9	3.9
167.5°	7.7	7.7	7.1	7.1	6.4	6.4	6.4	6.4
170°	10.3	9.7	9.0	9.0	8.4	8.4	8.4	8.4
172.5°	12.9	12.2	12.2	11.6	11.6	10.9	10.9	10.9
175°	16.1	15.4	15.4	15.4	14.8	14.8	14.8	14.8
177.5°	19.3	19.3	19.3	19.3	18.7	18.7	18.7	18.7
180°	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8

(END OF REPORT)